

Fig. 1

Embodiment ID	Ar Pressure (mT)	Ar flow (sccm)	N ₂ flow (sccm)	Thickness (Å)	Si(at.%)	Ti(AT.%)	N(at.%)	O(at.%)
1	1	15	6	913	40.6	3.8	55.3	0.3
2	1	15	7.5	812	39.7	3.5	56.4	0.5
3	1	15	9	739	39.2	3.3	57.1	0.36
4	2	15	6	838	39.1	3.6	56.3	0.96
5	2	15	9	667	38.5	3.3	56.2	1.97
6	5	15	6	761	36.5	3.5	47.3	12.74
7	5	15	7.5	635	36.7	3.5	42.3	17.5
8	5	15	9	580	37.1	3.4	46.2	13.35

Fig. 2

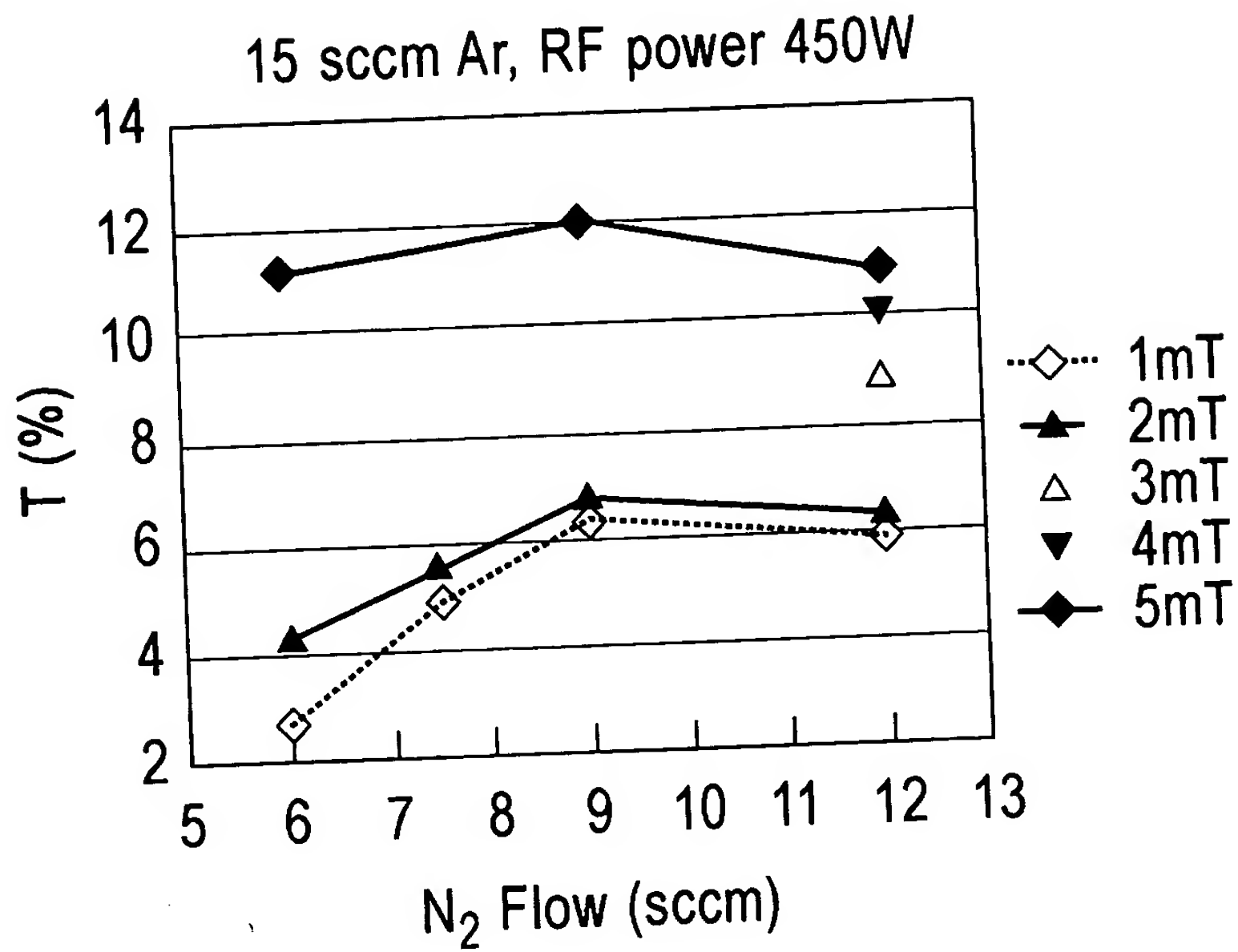


Fig. 3A

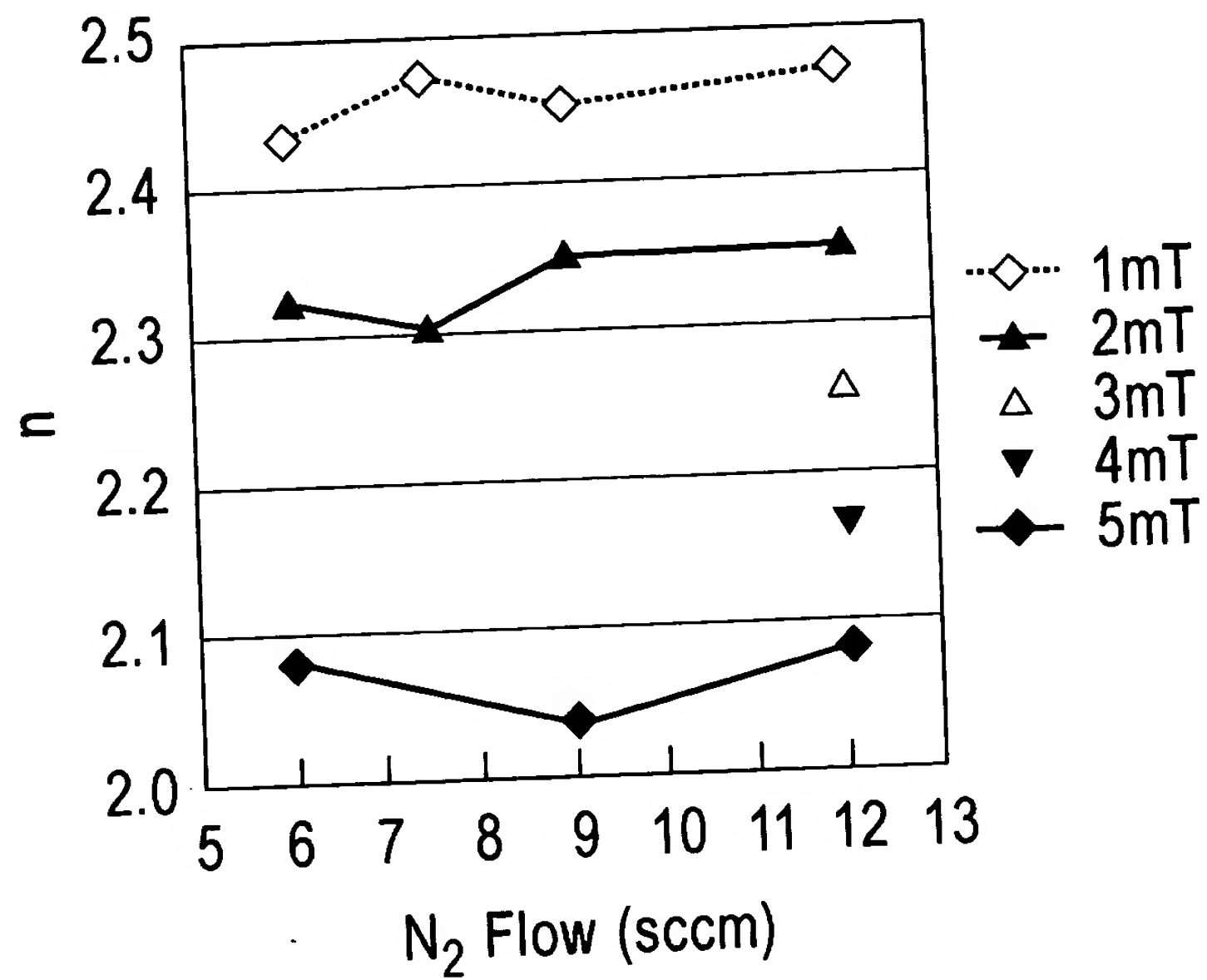


Fig. 3B

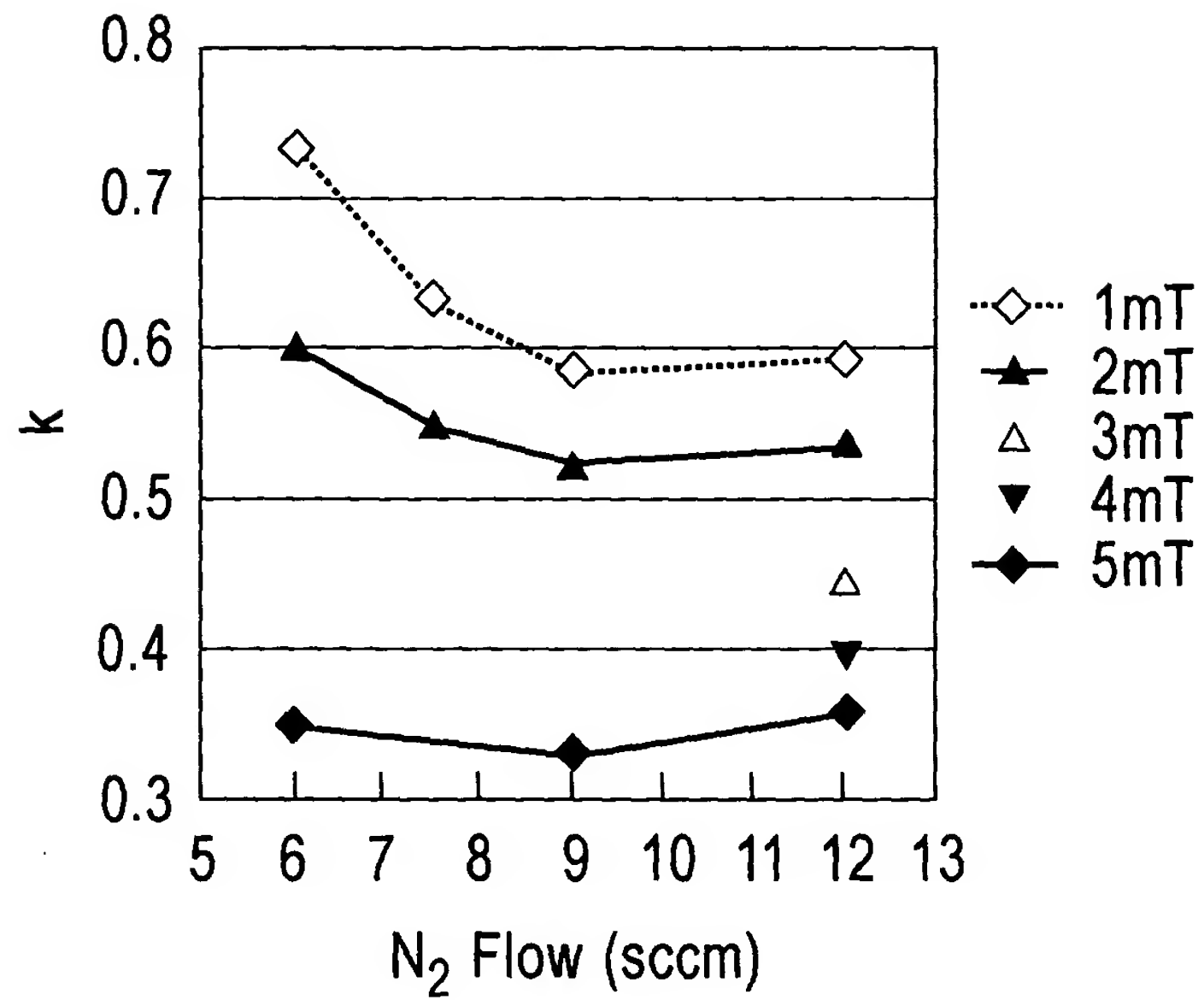
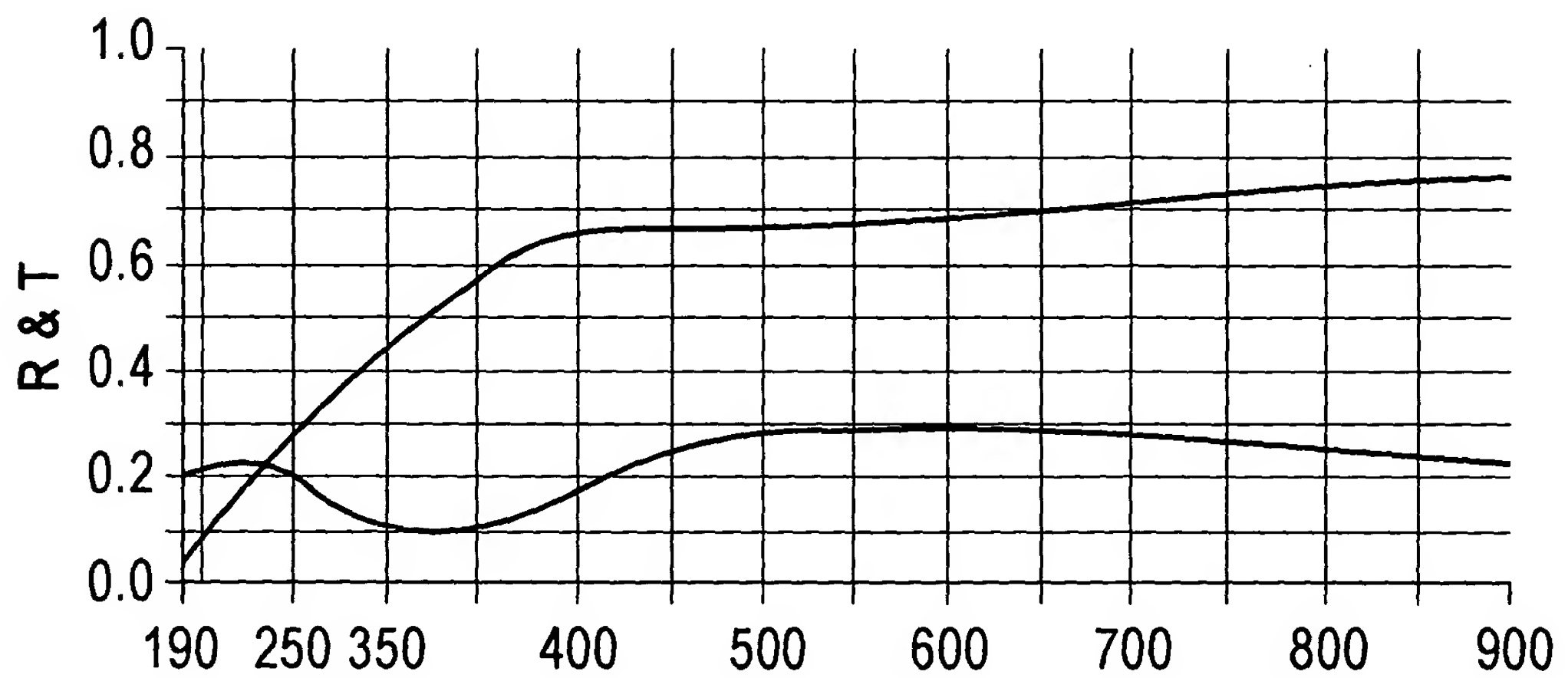


Fig. 3C



Thickness	T@193nm	R@193nm	PS@193nm	T@248nm	T@365nm
679A	5.72%	21%	183.1 deg	27%	60%

Fig. 4

Estimated Relative Composition in Atom Percent, from ESCA Surface Survey Scans

Sample Description	C	N	O	Si	Ti
Surface compositions					
Embodiment 9: 690Å thick film, as-deposited (1 mT, N ₂ flow 9 sccm)	7.4	36.3	21.6	32.0	2.2
Embodiment 9-annealed: 690Å thick film, annealed in air, 225°C, 15 minutes	5.5	34.9	24.3	32.0	2.3
Embodiment 10: 890Å thick film, as-deposited (5 mT, N ₂ flow 9 sccm)	12.2	28.1	29.8	27.7	2.0
Embodiment 10-annealed: 890Å thick film, annealed in air, 225°C, 15 minutes	12.6	26.4	31.8	26.9	2.1
Bulk compositions					
Embodiment 9: 690Å thick film, as-deposited (1 mT, N ₂ flow 9 sccm)	<1	54.1	<1	41.6	3.3
Embodiment 9-annealed: 690Å thick film, annealed in air, 225°C, 15 minutes	<1	52.4	<1	41.9	4.4
Embodiment 10: 890Å thick film, as-deposited (5 mT, N ₂ flow 9 sccm)	<1	40.3	16.3	39.1	4.3
Embodiment 10-annealed: 890Å thick film, annealed in air, 225°C, 15 minutes	<1	38.3	17.4	40.2	4.0

Fig. 5A

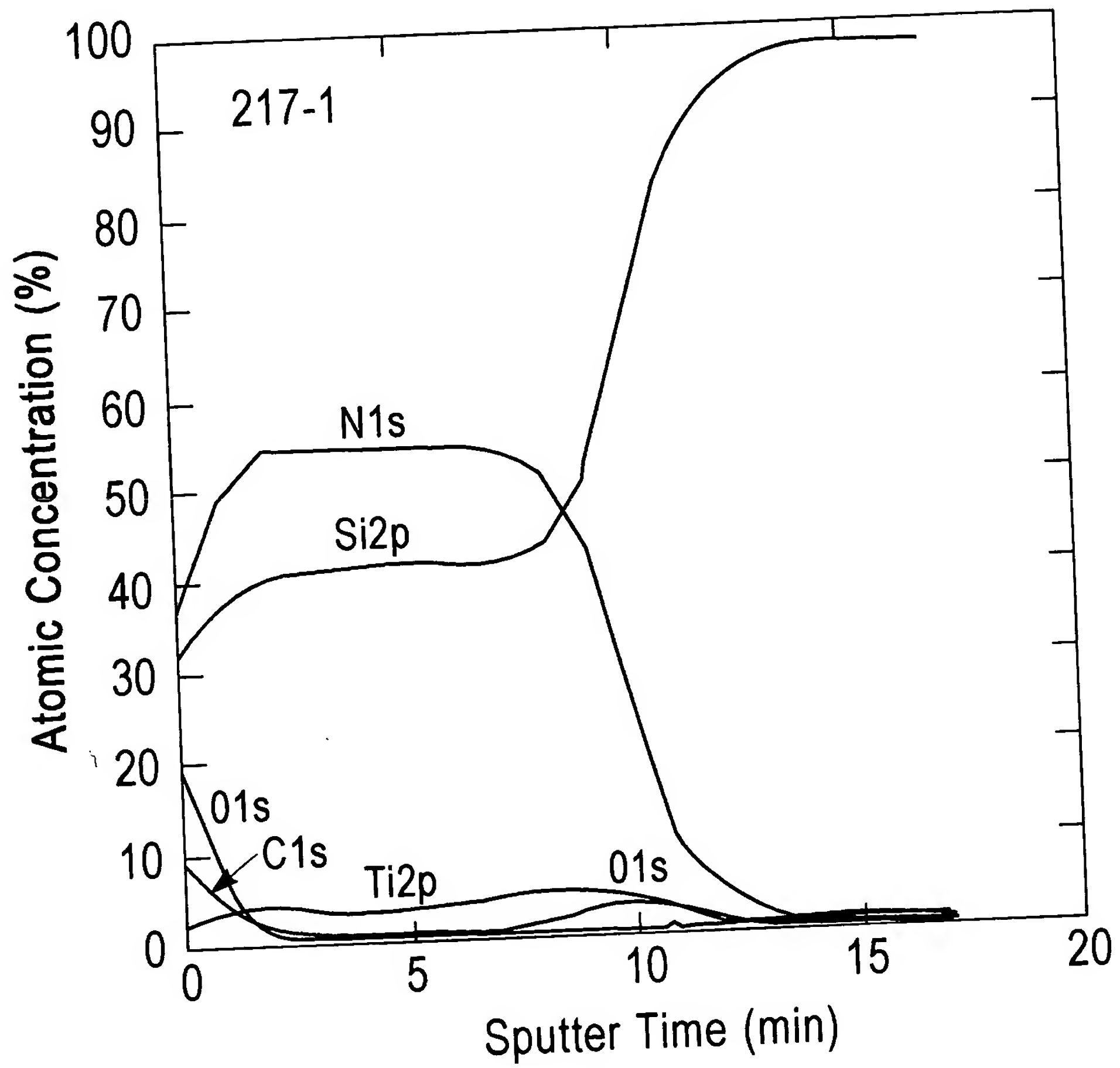


Fig. 5B

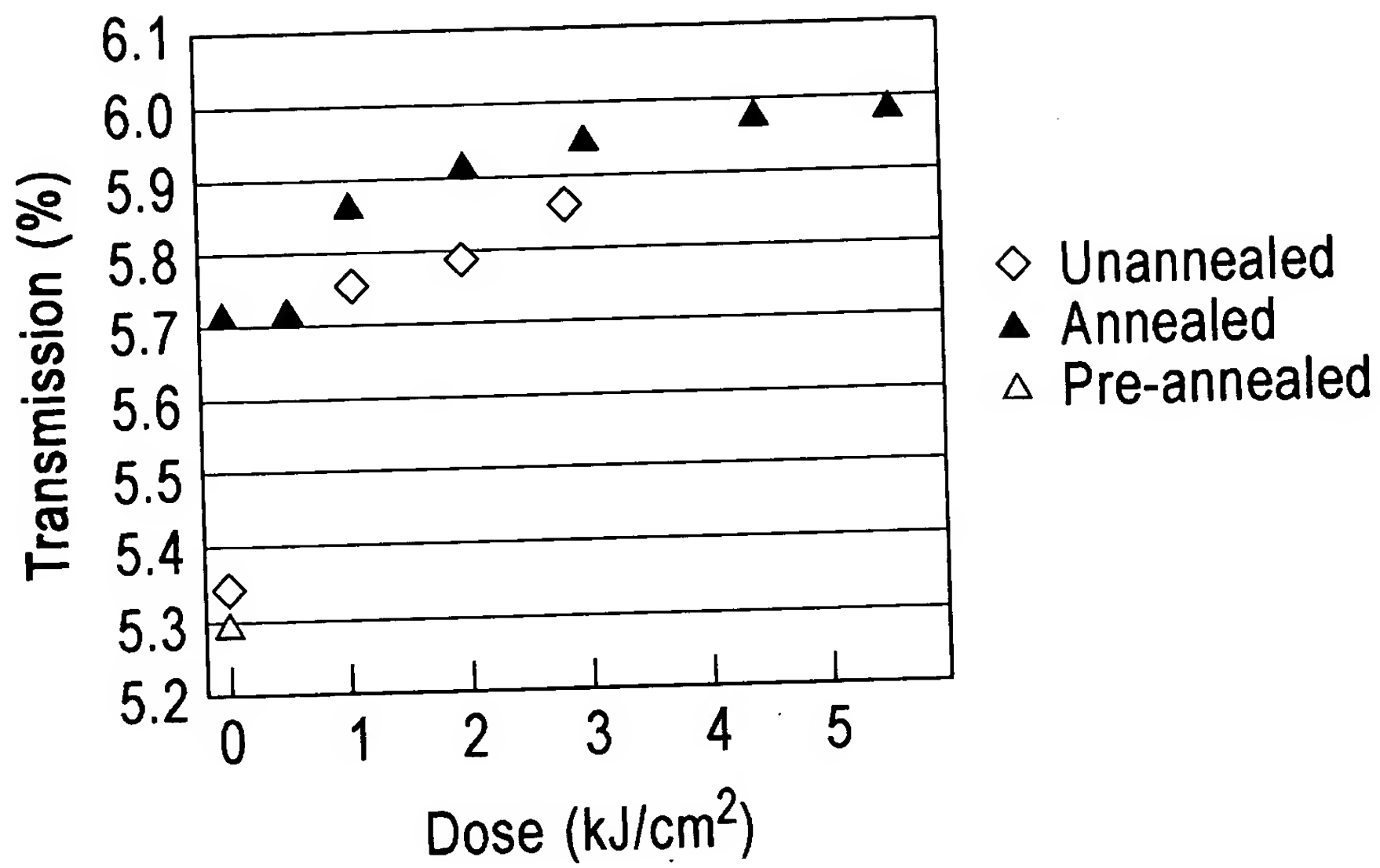


Fig. 6

	Air anneal 225°C, 15 min	N ₂ anneal 225°C, 15 min	Oxygen plasma (200W, 60min)
%T (initial)	5.61	5.61	5.60
%T (after treatment)	6.11	5.92	6.12
%T change after laser irradiation	0.27% after 5.4 kJ/cm ²	0.32% after 2.2 kJ/cm ²	

Fig. 7

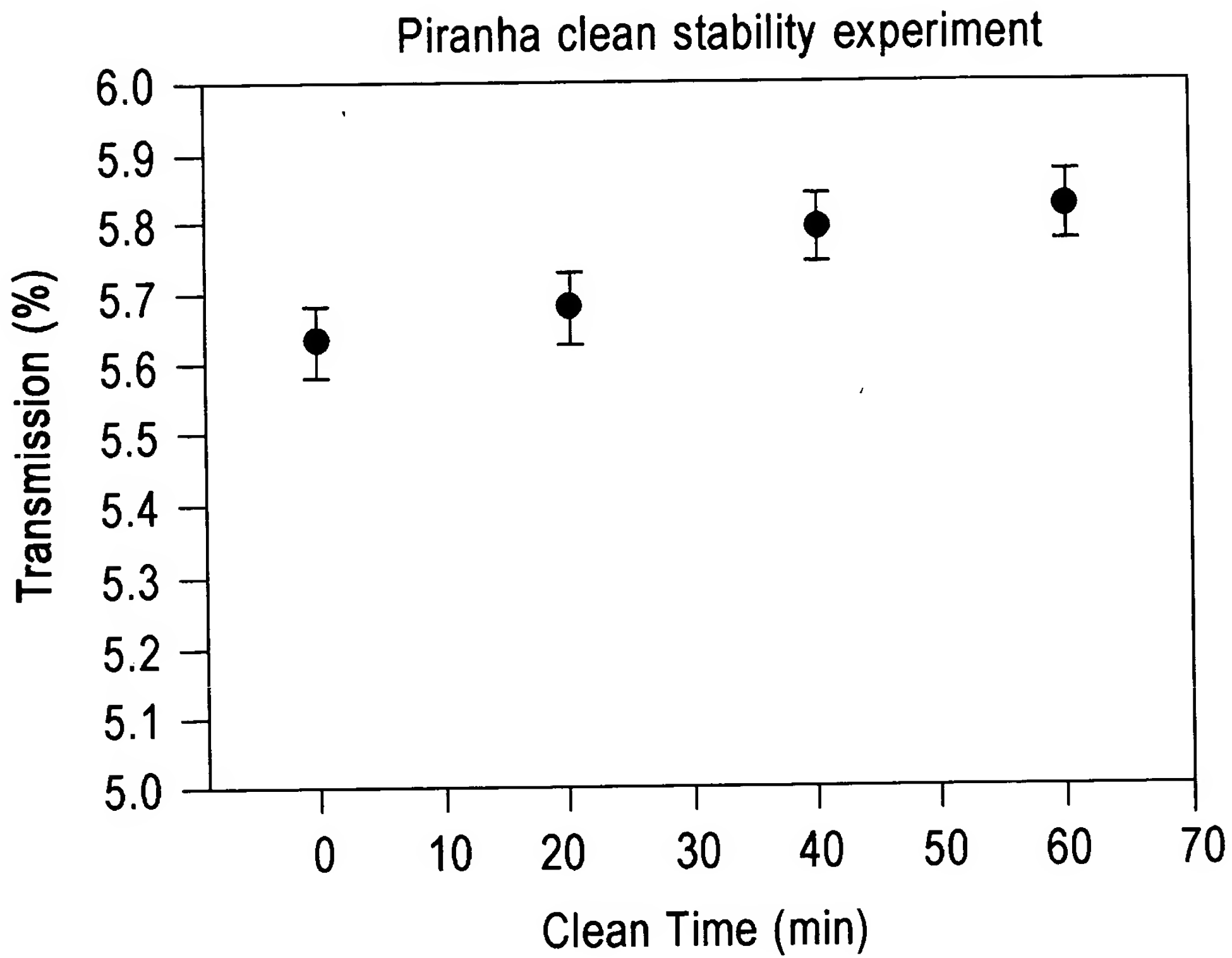


Fig. 8

ID	P _{Ar} (mT)	P _{N2} (mT)	P _{O2} (mT)	Si(%)	Ti(%)	N(%)	O(%)	t _{193nmPS} (Å)	%T 193nmPS	n	k
11	1	0.3	0.1	36	3.4	30	30	910	21.4	2.07	0.24
12	1	0.3	0.11	33.5	3	19.2	43.7	1,242	23	1.78	0.17
13	1	0.3	0.15	29.1	3.2	1.4	65.9	1,668	29	1.58	0.11
14	1	0.3	0.15	28.8	3.8	1.8	65.9	1,563	20.6	1.62	0.15

Fig. 9

Embodiment ID	Ti Power (W)	Ar Pressure (mT)	Thickness (Å)	Deposition Time (sec)	Si(at.%)	Ti(at.%)	N(at.%)	O(at.%)
15	80	2	726	400	40.8	2.5	53	3.27
16	90	2	729	400	39.2	2.9	53.5	4.19
17	120	2	673	400	38.6	4	52.5	4.58
18	80	1	1,169	600	40.5	2.6	55	1.39
19	120	1	1,212	600	38.9	4.2	54.9	1.6

Fig. 10

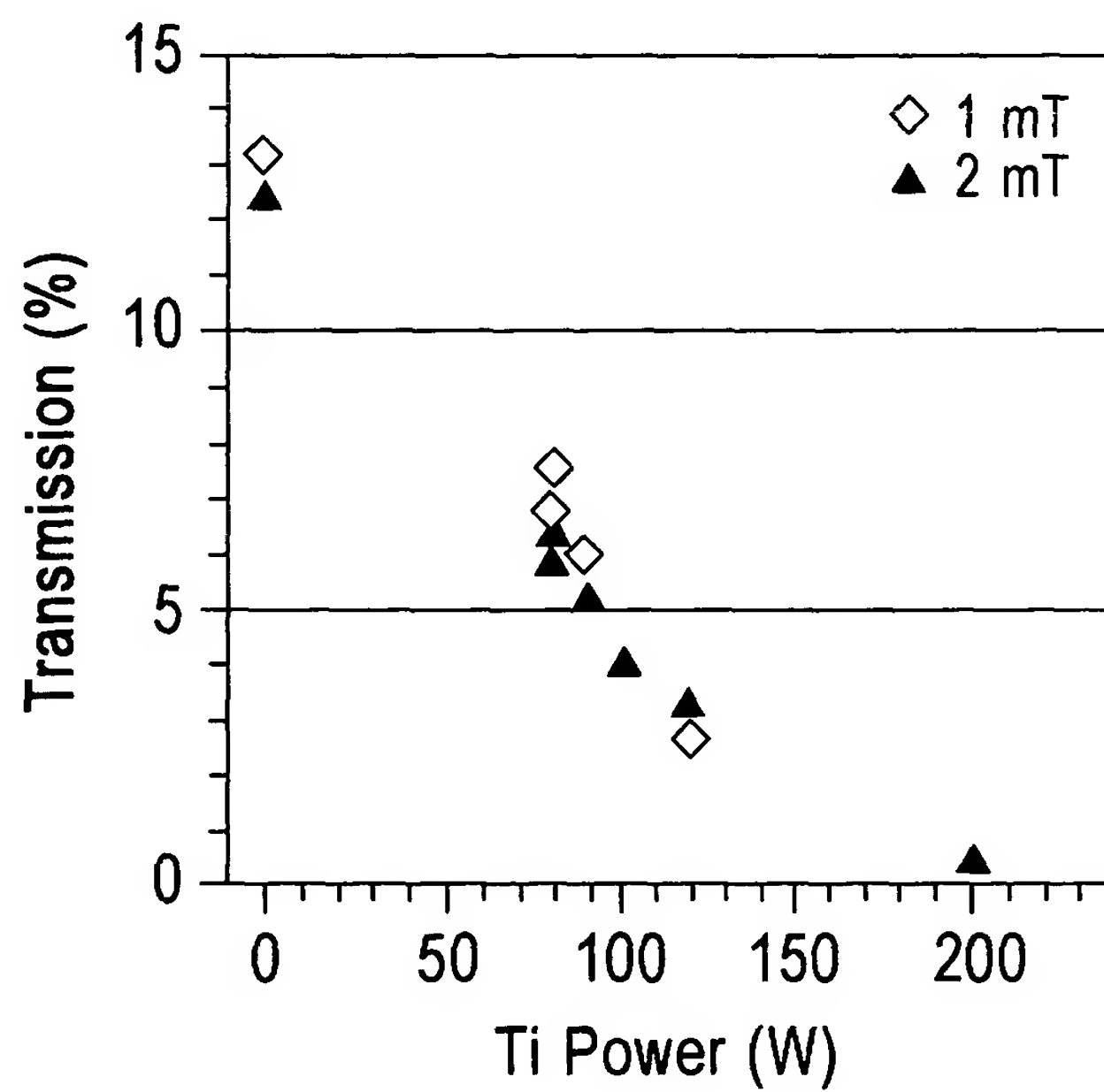


Fig. 11A

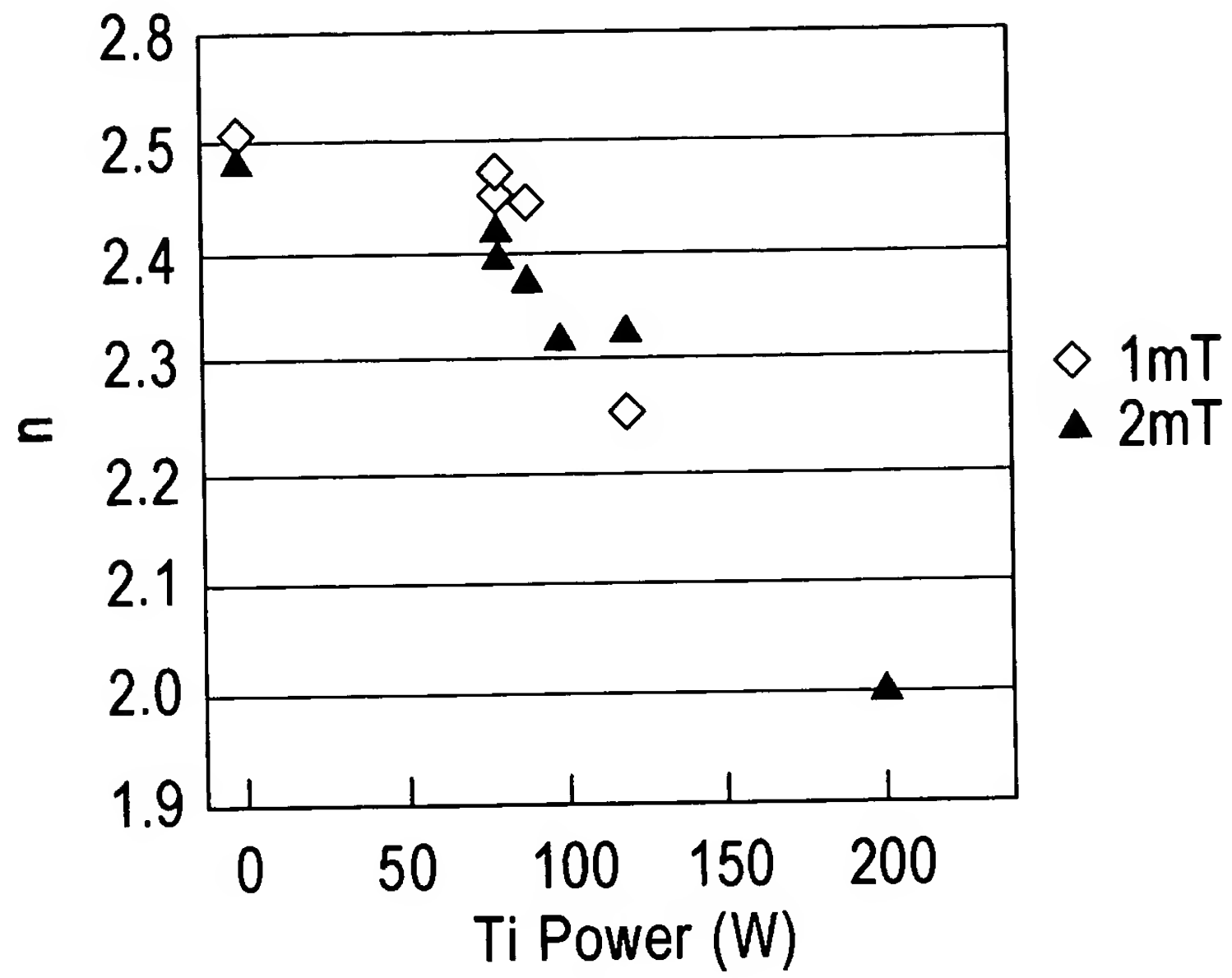


Fig. 11B

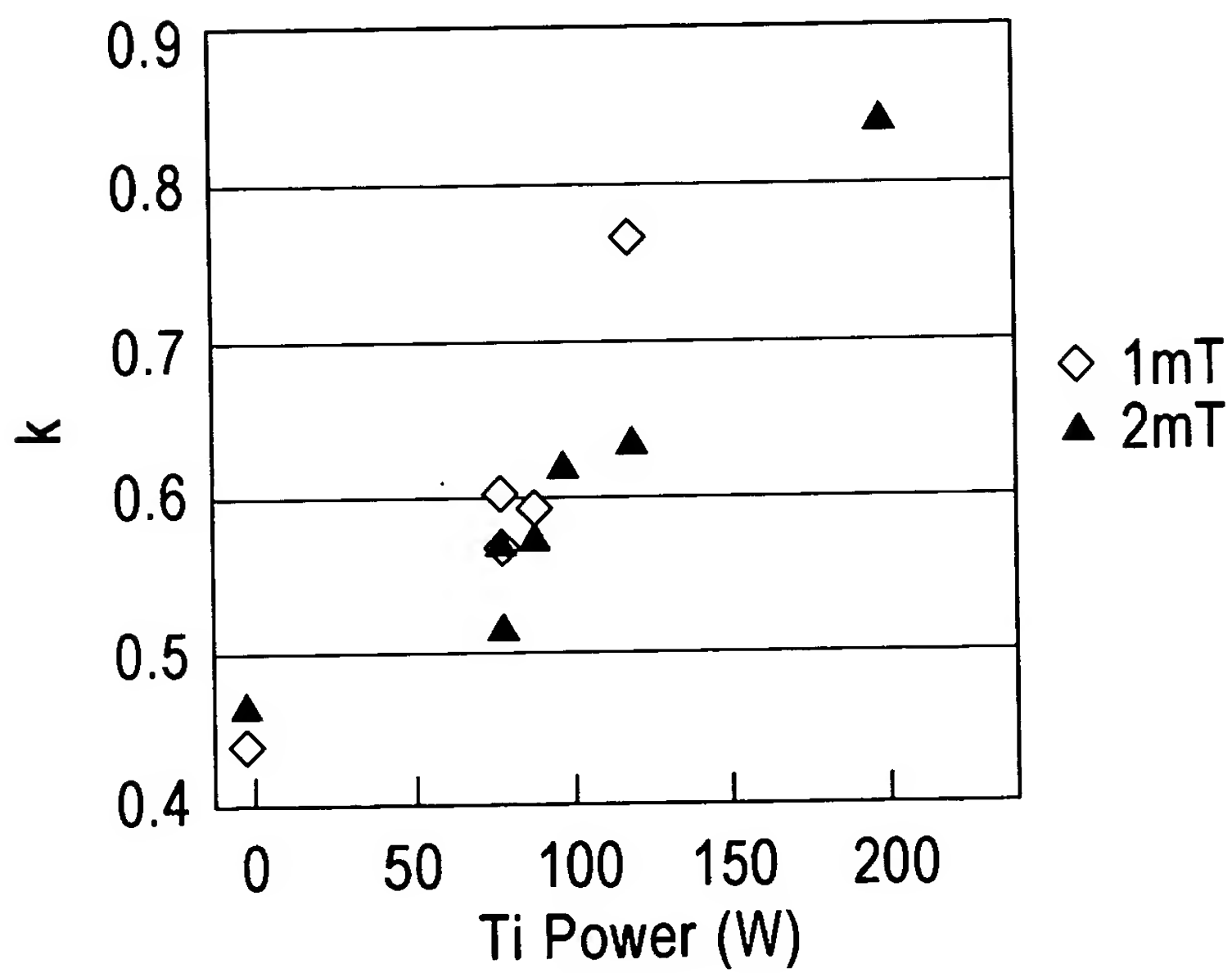


Fig. 11C